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An econometric approach to the effects of Euro to investments and growth on six European Union countries

Abstract

An econometric formula in evaluating investment activities and their impact on United Kingdom, Ireland, Italy, France, Germany and Greece is used, taking into account the impact of the introduction of the single currency within the Eurozone. Statistical data used cover the years from 1980 until 2007, they were collected mainly by Eurostat on the GDP, Public Debt, Budget Deficit, Unemployment rates, the Balance of Payments and Competitiveness for each of the six member countries. An attempt was made to combine the competitiveness index of the six member countries of the Eurozone at period t with the crucial investment variable. Findings reveal that there is a strong and causal relationship between investment and all variables used.

Keywords: investment index, European economies, Eurozone, classical linear model, Ordinary Least Squares method, economic development.
JEL Classification: O110, O160.

Introduction

The purpose of this paper is to present the primary elements and factors that contributed to the adoption of the Euro as the single currency by European Union member countries and to examine these factors through the effect they caused in certain European economies, as well as, through Europe's overall course of investment and development.

The use of an econometric formula in evaluating investment activities and their impact on Germany, France, Italy, Ireland, United Kingdom and Greece will provide an essential statistical assessment tool and the grounds for argumentation in this paper. For the reasons of the analysis, the above countries have been taken into consideration based on the fact that these states represent typical cases of development before and following the introduction of the single currency in the EU.

However, in order for a more thorough examination and presentation of the results of this study, an econometric model for the Greek economy will be examined, using the same indices and parameters, in order to compare the results of the above two cases.

1. Empirical model evaluation

In its general form, the model is represented by the following formula:

$$E(t) = f(Y_t, P_t, K_t, R_t, X_{1t}, X_{2t}, \ldots, X_{nt}, S_t),$$

where, according to the framework of econometric models analysis, investment activity in the EU is represented by a dependent variable ($E(t)$), which is affected and determined to a greater or lesser extent by these factors:

- GDP (Y_t) of each economy,
- changes in the overall consumer price index or the inflation (P_t) of each economy,
- public debt (K_t) and budget deficit (R_t),
- unemployment rates (S_t),
- investments recorded within an economy,
- balance of payments in conjunction with the existence of a surplus or a deficit, as well as
- competitiveness developed in n countries of the Eurozone at time period t, and which results in taking new productive investments by both the European economy and each individual state.

The impact of the introduction of the single currency within the Eurozone can be seen from time factor t. Yet due to time lag (t-1 former periods), comparing investment activities in absolute numbers is possible both on Eurozone and country levels.

2. Data collection

Statistical data required for this research were collected by several resources. In particular, data on the GDP (Y_t), public debt (K_t), budget deficit (R_t), unemployment rates, the balance of payments, as well as the rate of competitiveness both for Greece and the other examined countries were taken from the official websites of central banks and several other official state authorities. Data of course can be made available by the competent authority for monitoring EU statistical data, Eurostat, which validates their accuracy (data are always cross-checked by the Eurostat competent section). For the sake of consistency in presentation and for practical reasons, the Eurostat was finally chosen as the final resource for all data (Eurostat Press Releases, 1999, Eurostat, 2005). However, the problems have been encountered with regards to collecting information for all

time periods, as for certain countries such as Ireland some data were unavailable.

Similar tactics for collecting and classifying data is to be followed also for the variable that represents unemployment (European Commission, 1994). Even though this is a variable of crucial importance – an indication of an economy's progress that is regularly monitored by EU member states – no single policy is followed in the way it is presented by competent government monitoring bodies. For this reason, data kept by Eurostat for each variable have been used, mainly for the reasons of consistency and accuracy of data.

The data used cover the years from 1980 until 2007 (inclusive). These years represent a period that includes the crucial introduction of the Euro to European Union countries; this is considered as a landmark due to the adoption of the single currency in transactions within and outside state borders since the beginning of 2002 (European Commission, 1994, 2002, 2003, 2007a). At the same time, Greece was already an active member of the Eurozone, enjoying all the benefits from the joint accession and use of the single currency in individual transactions both within the country and with the other 14 member states (European Commission, 1995, 1996, 2007b, 2007c).

For all these data, calculation methods are mentioned, as well as what is included in each time series for each one of the six examined countries. A typical example is the calculation of the "Total Price Index Progress" variable or "Inflation" variable for Greece, for which a different method is used by Eurostat than the one used to announce the index results within the country.

An attempt is made to combine the competitiveness index of the six countries of the Eurozone (Greece and the other five European Union states) at period *t* with the crucial investment variable, as economic theory shows that sound economic conditions are an indication of investment activity and initiative that can also be the result of an increase in labor productivity (European Commission, 2006). These two variables often contain certain data that were difficult to calculate until recently, such as the innovations variable that is responsible for GDP growth, productivity increase and, consequently, increase in competitiveness. Yet, even in this case of examining available resources for the competitiveness index, as it is reflected in a country's investment activity, there are some points to which more attention was paid due to the above-mentioned problem, i.e. the means of measuring this variable as well as its characteristics during the official estimation process by competent governmental bodies and Eurostat.

3. Selection of a model, documentation and specificity

The selected model used in data analysis for the six countries is the Classical Linear Model estimated by Ordinary Least Squares method. The reason it was selected is that it simulates to a great extent the data assumptions, while it also prevails against the other models because:

- the estimator's properties (Christou, 1997) are impartial, uncorrelated among them and without any problems caused by the disturbance term (random variable);
- the use of a more complex mathematical formula is not required, because the theory we are hereby attempting to estimate is by experience not expressed by non-linear relationships, or above second-level relationships; this fact will also be shown later by the estimation results and has also been verified by the tests and analyses of data that have conducted;
- moreover, the other models used did not meet the Economy Model that we are attempting to estimate, but instead they comply with the consumer and producer theory, according to which corporate relationships should correspond to the possible existence of scale economies. Our case does not involve this type of relationships, as economic theory has already determined the signs of coefficient indices and we will attempt to validate their statistical significance.

In conclusion, it is referred that the Classical Linear Model in its overall presentation simplicity, also incorporates several other advantages with regards to its ability to evaluate data, not only for individual cases such as the estimated equation for Greece, but also for a set of equations to be estimated fot all five (5) countries. Therefore, we move ahead with the main purpose to empirically evaluate and validate the result of the historical data, to what extent the investments' rate increase is affected, as well as the effect on a country's business activities (mainly private): GDP, inflation, labor productivity, budget deficit and debt rates of increase or decrease, as well as a country's balance on current accounts. For this reason, the estimated model uses private business initiative for investments during 1980-2007 as a dependent variable. Depending on each separate case, the following are used as independent variables: the condition of the current account balance, inflation, the labor productivity increase rate as an index that reflects competitiveness, unemployment, GDP, public debt and deficit, the industry capital share and rate of performance. Depending on the

regression results, the relative meaning of these variables changes. We need to find those variables that affect and correlate with the dependent variable from an econometric point of view.

The estimated model has the following linear form:

$$(E_{it}) = a + \beta_0 (Y_{1t}) + \beta_1 (P_{2t}) + \beta_2 (K_{3t}) + \beta_3 (R_{4t}) +$$

$$+ \beta_4 (S_{5t}) + \beta_5 (I_{6t}) + \beta_6 (M_{7t}) + \beta_7 (C_{8t}) + \varepsilon_{it},$$

where independent variables correspond to each one of the above symbols, i.e.: Y is a country's Gross Domestic Product; P is a country's rate of change in prices (inflation); K is a country's public debt; R is a country's government budget deficit; S is a country's unemployment rate; I is a country's total private investments; M is a country's positive or negative result of its balance of payments; C is the competitiveness variable that is hereby referred to as labor productivity; ε_{it} is the disturbance term or alternatively the random variable, the effect of which is minimized in the model, on the basis of hypothesis.

The specificity of the model was based on what has been found from a critical view of related bibliography and econometric studies (Solow, 1956, 1957; Studenmund, 2001).

4. Research methodology

The use of economic data in econometric studies and estimations using the Ordinary Least Squares method often creates problems that are due either to the existence of spatial dependence or data correlation or even to the multicollinearity of the variables used. For this reason, certain tests are performed in order to examine whether these problems exist or not. These tests are: White test for heteroscedasticity, Lagrange multiplier tests, and correlation analysis for multicollinearity. Furthermore, in order for data used to be more accurate, they are usually converted into a logarithmic form. However, this was not required in this case, considering that all data refer to change rates and percentages. This fact has been also verified by regression results and particularly the results of the correlation coefficient, the value of which proves the degree of data adaptation in the regression line.

5. Research results

Results of the 1st Model for European Union countries

Following the necessary data processing and all required tests, the next step is to represent the Model that will be performed for the selected time series. According to all that has been noted earlier regarding the model type, it will have the following form for each one of the examined countries.

The estimated model

A. Germany

$$(E_{it}) = a + \beta_0 (Y_{1t}) + \beta_1 (P_{2t}) + \beta_2 (K_{3t}) + \beta_3 (R_{4t}) +$$

$$+ \beta_4 (S_{5t}) + \beta_5 (I_{6t}) + \beta_6 (M_{7t}) + \beta_7 (C_{8t}) + \varepsilon_{it}$$

Regression results of the model in Germany – a country that formed a powerful economy within the European Union in the past with its former currency (Mark) and still is a strong economy – show that: when competitiveness, balance of payments, public debt, budget deficit, GDP growth rate, rate of change in prices, unemployment and private investments are used as independent variables, then the equation does not present any correlations. This means that the results of the equation's variables for the current time period do not depend on earlier periods. The results for the coefficients R^2 and adj-R^2 are very high (0.985 and 0.96 respectively, Table 1), which means that a large part of the spatial dependence is satisfactorily expressed through the estimated equation. Moreover, the statistical significance of the independent variable coefficients in absolute numbers is satisfactory. Only the coefficients of public debt and GDP are not regarded as statistically significant, since their values (t-statistic) of 1.26 and 0.704 respectively are significantly less than the critical value of 2.

For the remaining statistically significant variables, coefficient signs of the above-mentioned independent variable coefficients follow the economy theory, i.e. private investment activity is negatively related to the balance of payments and the prices rate of increase. The signs of the remaining coefficients are positive, thus proving that investments are positively related to other fundamental and statistically significant variables (labor productivity, budget deficit/surplus, unemployment, equation constant). The explanation given is that there is no spatial dependence among these variables and a country's private investments at a given time, either in terms of units or change rates. In order to be able to make more detailed observations at an inter-sectoral and inter-regional level, adequate information on long-term conditions is necessary.

B. France

$$(E_{it}) = a + \beta_0 (Y_{1t}) + \beta_1 (P_{2t}) + \beta_2 (K_{3t}) + \beta_3 (R_{4t}) +$$

$$+ \beta_4 (S_{5t}) + \beta_5 (I_{6t}) + \beta_6 (M_{7t}) + \beta_7 (C_{8t}) + \varepsilon_{it}$$

Regression results for the model in France, that still constitutes a strong economy within the European Union, show that when competitiveness, balance of payments, public debt, budget deficit, GDP growth rate, the rate of change in prices, unemployment rates and private investments in the form of new

initiatives are used as independent variables, then the equation does not present any correlation. This means that variable results in the equation for the current period do not depend on earlier periods. The results of the R^2 and adj-R^2 coefficients are very high (0.986 and 0.96 respectivelly, Table 2), which indicates that a large part of the spatial dependence is adequately expressed by the estimated equation. The statistical significance of independent variable coefficients in absolute numbers is also satisfactory. Only the coefficients of competitiveness, public debt and inflation cannot be considered as statistically significant given that their absolute values (t-statistic) of 0.7, 0.35 and 0.08 respectively are significantly less than the equation's critical value of 2.

For the remaining statistically significant variables, coefficient signs of the above-mentioned independent variable coefficients follow the economy theory, i.e. private investment activity is negatively related to the balance of payments, the prices rate of increase and unemployment. The signs of the remaining coefficients indicate that the relationship between investments and the other fundamental and statistically significant variables (labor productivity, budget deficit/surplus, GDP, unemployment, equation constant) is expected: there is a negative relationship between investments and favorable conditions with unemployment, a positive relationship with the GDP growth rate, etc. The explanation given is that there is no spatial dependence among these variables and a country's private investments at a given time, either in terms of units or change rates. Yet, in order to be able to make more detailed observations at an inter-sectoral and inter-regional level, adequate information on long-term conditions is necessary.

C. Italy

$$(E_{it}) = a + \beta_0(Y_{1t}) + \beta_1(P_{2t}) + \beta_2(K_{3t}) + \beta_3(R_{4t}) +$$
$$+ \beta_4(S_{5t}) + \beta_5(I_{6t}) + \beta_6(M_{7t}) + \beta_7(C_{8t}) + \varepsilon_{it}$$

Regression results for the model in Italy (included in our research due to its being a neighboring country to Greece in the Mediterranean region), which constitutes both today and in the past a strong economy within the European Union, show that: when competitveness, balance of payments, public debt, budget deficit, GDP growth rate, the rate of change in prices, unemployment rates and private investments in the form of new initiatives are used as independent variables, then the equation does not present any correlations. This means that variable results in the equation for the current period do not depend on earlier periods. The results of the R^2 and adj-R^2 coefficients are very high (0.995 and 0.987 respectivelly, Table 3), indicating that a large part of the spatial dependence is adequately expressed by the estimated equation. The statistical significance of independent variable coefficients in absolute numbers is not satisfactory for Italy.

As a result, six out of seven variables, with the only exception of competitiveness (labor productivity) cannot be regarded as statistically significant, since their absolute values (*t*-statistic) are significantly less than the critical value of 2. In the case of Italy, even though data are nicely adapted to the regression line, we cannot safely reach conclusions regarding the impact these variables have on investments. Following this, the independent variable signs are not examined and only the positive sign of the statistically significant variable of competitiveness (labor productivity) is noted. The explanation given is that there is a causal link between these variables and a country's private investments at a given time, either in terms of units or change rates; this link is not indicated by initial tests. Another explanation would be that data have not been adjusted in the same way as in the other countries of our group.

D. Ireland

$$(E_{it}) = a + \beta_0(Y_{1t}) + \beta_1(P_{2t}) + \beta_2(K_{3t}) + \beta_3(R_{4t}) +$$
$$+ \beta_4(S_{5t}) + \beta_5(I_{6t}) + \beta_6(M_{7t}) + \beta_7(C_{8t}) + \varepsilon_{it}$$

Regression results for the model in Ireland, which forms a typical example of a country that went through rapid developments in the past and mainly in the latest years, show that when competitiveness, balance of payments, public debt, budget deficit, GDP growth rate, the rate of change in prices, unemployment rates and private investments in the form of new initiatives are used as dependent variables, then the equation does not present any correlations. This means that variable results in the equation for the current period do not depend on earlier periods.

The results for the coefficients R^2 and adj-R^2 are very high (0.921 and 0.784 respectively, Table 4), which means that a large part of the spatial dependence is satisfactorily expressed by the estimated equation. The statistical significance of independent variable coefficients in absolute numbers is also satisfactory. Only the coefficients of public debt, GDP, balance of payments and unemployment cannot be considered as statistically significant given that their absolute values (t-statistic) of 0.54, 0.44, 0.548 and 1.31 respectively are significantly less than the equation's critical value of 2.

For the remaining statistically significant variables, the signs of the above-mentioned independent vari-

able coefficients follow the economy theory, i.e. private investment activity is negatively related to the balance of payments, the prices rate of increase and unemployment. The signs of the other coefficients are positive indicating that there is a positive relationship between investments and the other fundamental and statistically significant variables. The explanation given is that the situation for this country is complicated and all conclusions drawn must be based on the fact that there is no spatial dependence among these variables and a country's private investments at a given time, either in terms of units or change rates; yet the adaptation of data at the estimated model continues to remain conditional, a fact that was also validated during the collection stage that followed, since their availability is at times very limited (e.g., competitiveness data). In order to be able to make more detailed observations at an inter-sectoral and inter-regional level, adequate information on long-term conditions is necessary.

E. United Kingdom

$$(E_{it}) = a + \beta_0(Y_{1t}) + \beta_1(P_{2t}) + \beta_2(K_{3t}) + \beta_3(R_{4t}) +$$
$$+ \beta_4(S_{5t}) + \beta_5(I_{6t}) + \beta_6(M_{7t}) + \beta_7(C_{8t}) + \varepsilon_{it}$$

Regression results for the model in the United Kingdom, which is a special case since its government chose not to proceed with the adoption of the single currency along with the other countries and maintain their own currency, show that the United Kingdom's strong economy continues to form a powerful partner in the new financial environment of the European Union, and participates actively in all activities and transactions, while maintaining some level of independence and autonomy through its national currency (the Pound).

The empirical evaluation of data performed shows that when competitiveness, balance of payments, public debt, budget deficit, GDP growth rate, the rate of change in prices, unemployment rates and private investments in the form of new initiatives are used as independent variables, then the equation does not present any correlations. This means that variable results in the equation for the current period do not depend on earlier periods. The results for the coefficients R^2 and adj-R^2 are comparatively high (0.88 and 0.66 respectively, Table 5), which means that a large part of the spatial dependence is satisfactorily expressed by the estimated equation. The statistical significance of independent variable coefficients in absolute numbers cannot be regarded as satisfactory as a whole: only the coefficients of public debt and budget deficit can be considered as statistically significant given that their absolute values (t-statistic) of 2.3 and 1.96 are close to the equation's critical value of 2.

With regards to variables in total, the signs of the above-mentioned coefficients do not appear to completely follow the economy theory, i.e. private investment activity is negatively related to the GDP growth rate and positively related to inflation and unemployment. The signs of the other coefficients are positive indicating that there is a positive relationship between investments and the other fundamental and statistically significant variables. The explanation given for the above findings is that, besides the fact that there is no spatial dependence between these variables and a country's private investments at a given time, either in terms of units or change rates, available empirical data do not seem to greatly affect the dependent variable; yet its interpretation is based on independent variables but apparently at a low degree of adaptation.

It is possible that UK's economic model is also determined by other factors due to its particularities, such as the exchange rates of its currency. In order to be able to make more detailed observations at an inter-sectoral and inter-regional level, adequate information on long-term conditions is necessary, as well as, find a way to achieve specificity of the model by using additional variables, either normally or as dummy variables, in order to determine how they affect the dependent variable.

F. Greece

Results of the 2nd Model for Greece

The estimated model

$$(E_{it}) = a + \beta_0(Y_{1t}) + \beta_1(P_{2t}) + \beta_2(K_{3t}) + \beta_3(R_{4t}) +$$
$$+\beta_4(S_{5t}) + \beta_5(I_{6t}) + \beta_6(M_{7t}) + \beta_7(C_{8t}) + \varepsilon_{it}$$

Regression results of the model for Greece have been very interesting. Greece, has recently taken important steps towards establishing its place within European Union core team members and adopting the single currency in all transactions, while enjoying all resulting benefits. Empirical evaluation results show that when competitiveness, balance of payments, public debt, budget deficit, GDP growth rate, the rate of change in prices, unemployment rates and private investments in the form of new initiatives are used as independent variables, then the equation does not present any correlations. This means that variable results in the equation for the current period do not depend on earlier periods. The results for the coefficients R^2 and adj-R^2 are very high (0.921 and 0.783 respectively, Table 6), which means that a large part of the spatial dependence is satisfactorily expressed by the estimated equation and also satisfactorily adapted in the regression line. Moreover, the statistical significance of the independent variable coefficients in absolute numbers is also satisfactory. Only the coefficients of public

debt and GDP are not regarded as statistically significant, since their values (t-statistic) of 0.799 and 1.93 respectively are significantly less than the critical value of 2.

For the remaining variables, the signs of the abovementioned independent variable coefficients follow the economy theory, i.e. private investment activity is negatively related to the balance of payments (deficit in our case), the prices rate of increase, unemployment and public debt. The sign of the competitiveness variable appears to be negative and since it is hereby associated with labor productivity (which is particularly low in Greece compared with the average of the other states as well as the EU-15 average), it may be an indication of the distortions that the Greek labor market has undergone. A possible explanation of evaluation results would be that in order to be able to make more detailed observations at a domestic and an inter-regional level, adequate information on long-term conditions for all regions is necessary; such in-depth information would probably indicate the actual distribution, structure and contribution of each region to the overall development.

Conclusions

The purpose of this paper was to present the primary elements and factors that contributed to the adoption of the Euro as the single currency by European Union countries and to examine these factors through the effect they caused in certain European economies, as well as, through Europe's overall course of investment and development.

Statistical data used cover the years from 1980 until 2007. They were collected mainly by Eurostat on the GDP (Y_t), Public Debt (K_t), Budget Deficit (R_t), Unemployment rates, the Balance of Payments and Competitiveness for each of the six countries. An attempt is made to combine the competitiveness index of the six countries of the Eurozone at period t with the crucial investment variable, as economic theory shows that sound economic conditions are an indication of investment activity and initiative that can also be the result of an increase in labor productivity (European Commission, 2006). The selected model used in data analysis for the six countries is the Classical Linear Model estimated by Ordinary Least Squares method due to the fact that it simulates to a great extent the data assumptions.

It is also attempted to provide an empirical analysis of the current situation with regards to the relation that links the percentage of new private investment with the GDP growth rate, competitiveness, balance of payments, budget deficit, public debt, inflation and unemployment rates of the five EU member states.

Overall, regression results validate the assumption that there is a strong and causal relationship between investment and all variables used. The inter-sectoral and inter-regional analysis can provide details on the sectors and regions in which these results are more and less intense. At the same time, there is a profound need to validate the remarks that emerged from analyzing the current regional situation with regards to the rate of development/lag that each region experiences.

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Appendix

Table 1. Regression analysis – Germany

Dependent variable: BUSINVEST

Method: Least Squares

Sample: 1980-2007

Included observations: 27

Variable	Coefficient	Std. error	t-statistic	Prob.
COMPETITIVE	-0.029508	0.008663	-3.406119	0.0271
CURRENT BALANCE	-0.564748	0.217320	-2.598689	0.0601
DEBT	0.073320	0.058217	1.259429	0.2764
DEFICIT	0.438121	0.098409	4.452044	0.0112
GDP	0.116538	0.165471	0.704276	0.5201
INFLATION	-0.485018	0.213713	-2.269486	0.0858
UNEMPLOYMENT	0.837851	0.257052	3.259463	0.0311
C	18.48279	2.986860	6.188034	0.0035
R-squared	**0.985479**	Mean dependent var.		18.05833
Adjusted R-squared	**0.960068**	S.D. dependent var.		1.551807
S.E. of regression	0.310097	Akaike info criterion		0.730855
Sum squared resid.	0.384640	Schwarz criterion		1.054127
Log likelihood	3.614868	**F-statistic**		**38.78142**
Durbin-Watson stat.	2.943863	**Prob (F-statistic)**		**0.001621**

Table 2. Regression analysis – France

Dependent variable: BUSINVEST

Method: Least Squares

Sample: 1980-2007

Included observations: 27

Variable	Coefficient	Std. error	t-statistic	Prob.
COMPETITIVE	-0.003442	0.003969	-0.867438	0.4346
CURRENT BAL	-0.329714	0.054374	-6.063860	0.0037
DEBT	0.004517	0.012864	0.351126	0.7432
DEFICIT	0.219557	0.087774	2.501393	0.0667
GDP	0.223437	0.058029	3.850463	0.0183
INFLATION	0.020013	0.241760	0.082782	0.9380
UNEMPLOYMENT	-0.365662	0.109279	-3.346145	0.0287
C	20.47083	0.908916	22.52225	0.0000
R-squared	**0.986037**	Mean dependent var.		15.78333
Adjusted R-squared	**0.961601**	S.D. dependent var.		0.805474
S.E. of regression	0.157838	Akaike info criterion		-0.619775
Sum squared resid.	0.099651	Schwarz criterion		-0.296504

Table 2 (cont.). Regression analysis – France

Variable	Coefficient	Std. error	t-statistic	Prob.
Log likelihood	11.71865	**F-statistic**		**40.35225**
Durbin-Watson stat.	2.749632	**Prob (F-statistic)**		**0.001500**

Table 3. Regression analysis – Italy

Dependent variable: BUSINVEST

Method: Least Squares

Sample: 1980-2007

Included observations: 27

Variable	Coefficient	Std. error	t-statistic	Prob.
COMPETITIVE	0.173944	0.013149	13.22894	0.0002
CURRENT BAL	0.049753	0.730862	0.068074	0.9490
DEBT	0.198782	0.288491	0.689040	0.5287
DEFICIT	-0.091876	0.464857	-0.197643	0.8530
GDP	**-0.289244**	**0.344961**	**-0.838481**	**0.4489**
INFLATION	**0.172254**	**1.203943**	**0.143075**	**0.8931**
UNEMPLOYMENT	**-0.329783**	**0.534405**	**-0.617103**	**0.5706**
C	**22.61577**	**32.12779**	**0.703932**	**0.5203**
R-squared	**0.995274**	Mean dependent var.		16.19167
Adjusted R-squared	**0.987004**	S.D. dependent var.		5.148955
S.E. of regression	0.586976	Akaike info criterion		2.007054
Sum squared resid.	1.378161	Schwarz criterion		2.330325
Log likelihood	-4.042324	**F-statistic**		**120.3471**
Durbin-Watson stat.	2.988370	**Prob (F-statistic)**		**0.000174**

Table 4. Regression analysis – Ireland

Dependent variable: BUSINVEST

Method: Least Squares

Sample: 1980-2007

Included observations: 27

Variable	Coefficient	Std. error	t-statistic	Prob.
COMPETITIVE	0.022730	0.017381	1.307742	0.2611
CURRENT BAL	-0.241677	0.440789	-0.548284	0.6127
DEBT	0.031409	0.058110	0.540498	0.6175
DEFICIT	0.601999	0.335124	1.796346	0.1469
GDP	0.144979	0.328986	0.440686	0.6822
INFLATION	-1.106944	0.375833	-2.945311	0.0422
UNEMPLOYMENT	-0.543788	0.414903	-1.310639	0.2602
C	22.30405	4.654195	4.792247	0.0087
R-squared	**0.921608**	Mean dependent var.		18.96667
Adjusted R-squared	**0.784421**	S.D. dependent var.		2.274496
S.E. of regression	1.056060	Akaike info criterion		3.181688

Table 4 (cont.). Regression analysis – Ireland

Variable	Coefficient	Std. error	t-statistic	Prob.
Sum squared resid.	4.461049	Schwarz criterion		3.504959
Log likelihood	-11.09013	**F-statistic**		**6.717910**
Durbin-Watson stat.	2.710246	**Prob (F-statistic)**		**0.042348**

Table 5. Regression analysis – United Kingdom

Dependent variable: BUSINVEST

Method: Least Squares

Sample: 1980-2007

Included observations: 27

Variable	Coefficient	Std. error	t-statistic	Prob.
COMPETITIVE	0.010183	0.006682	1.524000	0.2022
CURRENT BAL	-0.028386	0.189521	-0.149776	0.8882
DEBT	-0.049846	0.021637	-2.303745	0.0826
DEFICIT	0.154832	0.078811	1.964585	0.1209
GDP	-0.231163	0.236438	-0.977690	0.3836
INFLATION	0.394381	0.243266	1.621191	0.1803
UNEMPLOYMENT	0.398552	0.300479	1.326386	0.2554
C	11.37275	2.718293	4.183785	0.0139
R-squared	**0.876534**	Mean dependent var.		15.78333
Adjusted R-squared	**0.660468**	S.D. dependent var.		0.579707
S.E. of regression	0.337792	Akaike info criterion		0.901946
Sum squared resid.	0.456413	Schwarz criterion		1.225217
Log likelihood	2.588325	**F-statistic**		**4.056797**
Durbin-Watson stat.	2.320009	**Prob (F-statistic)**		**0.097030**

Table 6. Regression analysis – Greece

Dependent variable: BUSINVEST

Method: Least Squares

Sample: 1980-2007

Included observations: 27

Variable	Coefficient	Std. error	t-statistic	Prob.
COMPETITIVE	-0.013030	0.016193	-0.804689	0.4661
CURRENT BAL	-0.429026	0.322928	-1.328551	0.2547
DEBT	0.052086	0.065193	0.798948	0.4691
DEFICIT	-0.119949	0.297435	-0.403279	0.7074
GDP	0.695752	0.359945	1.932940	0.1254
INFLATION	-0.206297	0.270058	-0.763897	0.4875
UNEMPLOYMENT	-0.157019	0.664696	-0.236227	0.8249
C	19.50416	7.921761	2.462099	0.0695
R-squared	**0.921042**	Mean dependent var.		17.19167
Adjusted R-squared	**0.782865**	S.D. dependent var.		2.109484
S.E. of regression	0.982972	Akaike info criterion		3.038249
Sum squared resid.	3.864935	Schwarz criterion		3.361520

Table 6 (cont.). Regression analysis – Greece

Variable	Coefficient	Std. error	t-statistic	Prob.
Log likelihood	-10.22949	**F- statistic**		**6.665680**
Durbin-Watson stat.	2.685637	**Prob (F-statistic)**		**0.042919**